

WHAT IS CLAIMED IS:

1. A proxy network control apparatus for substituting for service equipment providing predetermined services to user terminal, and executing functions complementing or expanding the functions of the service equipment, comprising:

10 a packet monitoring unit for monitoring packets interchanged between the user terminal and the service equipment; and

15 an execution unit for determining and executing the functions complementing or expanding, based on packets monitored by the packet monitoring unit.

20 2. A proxy network control apparatus for executing functions complementing or expanding functions of service equipment as a substitute for the service equipment by controlling network equipment transferring packets interchanged between a user terminal and the service equipment, arranged between the user terminal and the service equipment providing predetermined services to the user terminal, comprising:

25 a packet monitoring unit for monitoring packets interchanged between the user terminal and the service equipment;

30 a service control unit for determining the functions complementing or expanding based on the packets monitored

by the packet monitoring unit; and

an external equipment control unit for controlling the network equipment based on the functions determined by the service control unit.

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3. The proxy network control apparatus according to claim 2, wherein

the service equipment is a DHCP server, wherein the packet monitoring unit monitors packets

10 containing addresses issued from the service equipment to the user terminal, wherein

the service control unit determines an access regulation function for allowing the packets having addresses issued by the service equipment as the source 15 addresses to pass and not allowing the packets having other addresses as the source addresses to pass, based on the packets monitored by the packet monitoring unit, and wherein

the external equipment control unit controls the 20 network equipment so as to execute the access regulation function.

4. The proxy network control apparatus according to claim 2, wherein

25 the user terminal is a mobile communication terminal having a home address of its home network, wherein the network equipment is a firewall which allows

packets having predetermined source addresses to pass and which does not allow other packets to pass among packets transmitted from an external network of the home network to the exterior, wherein

5        the packet monitoring unit monitors packets containing the home address of the user terminal, interchanged between the user terminal having moved into the external network and a home agent of the home network, wherein

10       the service control unit determines a function for releasing access regulation such that the packets having the home address are passed, based on the packets monitored by the packet monitoring unit, and wherein

15       the external equipment control unit controls the network equipment so as to execute the function for releasing the access regulation.

5.       The proxy network control apparatus according to claim 2, wherein

20       the user terminal is an IPv6 terminal, wherein the service equipment is an authentication server for executing authentication of a created IP address of the user terminal, wherein

25       the packet monitoring unit monitors packets containing IP addresses authenticated by the service equipment, wherein

the service control unit determines a function for

releasing access regulation such that the packets having the IP addresses as the source addresses are passed, based on the packets monitored by the packet monitoring unit, wherein

5       the external equipment control unit controls the network equipment so as to execute the function for releasing the access regulation.

6.       The proxy network control apparatus according to claim  
10 5, further comprising an address transmission unit for creating an IP address of the user terminal and transmitting it to the user terminal, or for transmitting a network prefix to the user terminal.

15 7.       The proxy network control apparatus according to claim 2, wherein the functions determined by the service control unit include a function for recording predetermined information.

20 8.       The proxy network control apparatus according to claim 2, wherein the functions determined by the service control unit include a function for transmitting messages to a predetermined network equipment or the service equipment.

25 9.       A program for causing a computer to execute the steps of:

monitoring packets interchanged between a user

terminal and service equipment providing predetermined services to the user terminal; and

5 determining and executing functions for complementing or expanding the functions of the service equipment based on the monitored packets, in lieu of the service equipment.

10. A program for causing a computer for executing functions complementing or expanding functions of service equipment as a substitute for the service equipment by 10 controlling network equipment transferring packets interchanged between a user terminal and the service equipment, arranged between the user terminal and the service equipment providing predetermined services to the user terminal, to execute the steps of:

15 monitoring packets interchanged between the user terminal and the service equipment;

determining the functions for complementing or expanding based on the monitored packets; and

20 controlling the network equipment based on the determined functions.

11. A network system comprising:

service equipment for communicating with a user terminal and providing predetermined services to the user 25 terminal; and

a proxy network control apparatus for monitoring packets interchanged between the user terminal and the

service equipment and executing functions complementing or expanding the functions of the service equipment based on the packets meeting predetermined conditions.

5 12. The network system according to claim 11, wherein the proxy network control apparatus is integrated in the service equipment.

13. A network system comprising:

10 service equipment for communicating with a user terminal and providing predetermined services to the user terminal;

network equipment arranged between the user terminal and the service equipment, for transferring packets 15 interchanged between the user terminal and the service equipment; and

a proxy network control apparatus for monitoring packets interchanged between the user terminal and the service equipment and for executing functions 20 complementing or expanding the functions of the service equipment as a substitute for the service equipment by controlling the network equipment based on the packets meeting predetermined conditions.

25 14. The network system according to claim 13, wherein the proxy network control apparatus is integrated in the service equipment.

15. The network system according to claim 13, wherein the service equipment is a DHCP server, wherein  
the proxy network control apparatus monitors packets  
5 containing an address distributed to the user terminal from the service equipment and controls the network equipment so as to allow the packets transmitted from the user terminal and having the address as the source address to pass and so as not to allow other packets to pass.

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16. The network system according to claim 13, wherein the user terminal is a mobile communication terminal having a home address of a home network, wherein  
the network equipment is network equipment allowing  
15 the packets having a predetermined source address to pass and not allowing other packets to pass among the packets transmitted from an external network of the home network to the exterior, and wherein  
the proxy network control apparatus controls the  
20 network equipment so as to pass the packets containing the home address of the user terminal as the source address, based on the packets containing the home address of the user terminal interchanged between the user terminal moved into the external network and a home agent of the home  
25 network.

17. The network system according to claim 13, wherein

the user terminal is an IPv6 terminal, wherein  
the service equipment is an authentication server for  
authenticating created IP address of the user terminal,  
wherein

5       the proxy network unit controls the network equipment  
so as to allow the packets having the IP address  
authenticated by the service equipment as the source  
address to pass.

10   18. The network system according to claim 17, wherein the  
proxy network control apparatus further executes a function  
for creating the IP address of the user terminal and sending  
it to the user terminal, or for transmitting a network  
prefix to the user terminal.

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